A segment of the 84-year-old, three-foot diameter brick tunnel beneath Carnegie Avenue collapsed, eroding the roadbed and eventually causing the asphalt surface to cave in.

Water/sewer tunnel's collapse caused sinkhole

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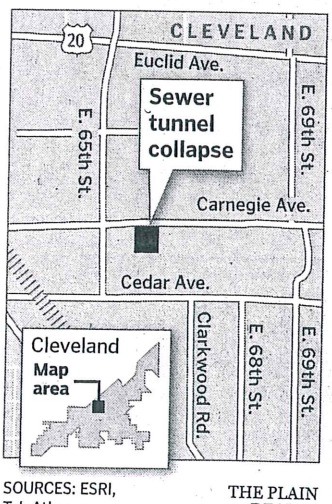
The collapse of an aging underground water/sewer tunnel section is to blame for a yawning chasm that opened Monday on Carnegie Avenue east of downtown Cleveland.

A segment of the 84-year-old brick waterway beneath the busy street gave way, eroding the roadbed and eventually causing the asphalt surface to cave in. The result is a hole big enough to swallow an SUV, although the abyss didn't claim any drivers before workers cordoned it off. The cavity is in Carnegie's center turn lane near East 65th Street.

Officials are uncertain what caused the tunnel segment to crumble but suspect it was age.

"With all the rain we're getting this spring, you could speculate the water and everything else caused some bricks to get loose," said Alan Seifullah, a spokesman for Cleveland Public Utilities. Such failures are "not that rare. It's the same with water main breaks. We have an aging system."



SOURCES: ESRI, TeleAtlas THE PLAIN DEALER

Engineers are still assessing the extent of damage to the stormwater/sanitary sewer using remote cameras, Seifullah said. The collapsed segment of the three-foot-diameter tunnel will most likely have to be replaced with a concrete pipe. If workers find no additional problems, the repairs will take about one week, Seifullah said. Crews will have to refill the 16-foot-deep hole and repair the road's surface.

Traffic is reduced to one lane in either direction while the work is under way.

While the culprit in this case was a defective pipeline, sinkholes can form from a variety of causes, both manmade and natural.

Water is often the mechanism, whether from a broken main, an underground aquifer or stormwater runoff. If subsurface rock is water-soluble — such as limestone, carbonates or salt beds — the flow gradually can hollow out a void. Until the cavity reaches a critical size, the surface above remains intact, giving little warning of collapse.

In 2004, Ohio Department of Transportation workers spotted a depression in a section of Interstate 480 westbound near Lee Road that signaled a potential sinkhole. Inspection crews found a damaged culvert that had eroded material below the pavement, said ODOT District 12 spokeswoman Jackie Schafer. They fixed the culvert, replaced and compacted the fill and repaired the roadway.

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